We claim:

1. A hybrid dispersion comprising polyadducts and free-radical addition polymers, obtainable by first emulsifying the constituent monomers of said polyadducts and polymers in water and then conducting the polyaddition to prepare the polyadducts and the free-radical addition polymerization to prepare the polymers, the respective monomers being emulsified in water before 40% of the monomers of which the polyadducts are composed have reacted to form such polyadducts.

2. A hybrid dispersion as claimed in claim 1, obtainable by conducting the polyaddition and the free-radical addition polymerization in an aqueous miniemulsion whose monomer droplets have a monomer particle size of not more than 1000 nm.

3. A hybrid dispersion as claimed in claim 1 or 2, obtainable by emulsifying the respective monomers in water before 20% of the monomers of which the polyadducts are composed have reacted to form such polyadducts.

4. A hybrid dispersion as claimed in claim 1 or 3, obtainable by emulsifying the respective monomers in water before 5% of the monomers of which the polyadducts are composed have reacted to form such polyadducts.

5. A hybrid dispersion as claimed in any of claims 1 to 4, comprising polyurethanes and polyurethaneureas as polyadducts.

6. A hybrid dispersion as claimed in any of claims 1 to 5, comprising polyadducts formed by reaction of epoxide groups with alcohols, acids, amines or anhydrides.

7. A hybrid dispersion as claimed in any of claims 1 to 6, comprising free-radical addition polymers composed in total of at least 40% by weight of principal monomers selected from C_1 to C_{20} alkyl (meth)acrylates, C_3 to C_{20} cycloalkyl (meth)acrylates, vinylaromatics having up to 20 carbon atoms, vinyl esters of carboxylic acids having 1 to 20 carbon atoms, ethylenically unsaturated nitriles, vinyl ethers of alcohols containing 1 to 10 carbon atoms, vinyl halides, nonaromatic hydrocarbons having 2 to 8 carbon atoms and one or two conjugated double bonds, and mixtures of these monomers.

8. A hybrid dispersion as claimed in any of claims 1 to 7, the proportion of the polyadducts based on the sum of the fractions of the polyadducts and of the free-radical addition polymers being from 1 to 99% by weight.

9. A process for preparing a hybrid dispersion comprising polyadducts and free-radical addition polymers, which comprises first emulsifying the constituent monomers of said polyadducts and polymers in water and then conducting the polyaddition to prepare the polyadducts and the free-radical addition polymerization to prepare the polymers, the respective monomers being emulsified in water before 40% of the monomers of which the polyadducts are composed have reacted to form such polyadducts.

10. A process as claimed in claim 9, wherein the polyaddition and the free-radical addition polymerization are conducted at the same time.

11. A process as claimed in claim 9, wherein first the polyaddition and then the free-radical addition polymerization is conducted.

12. A process as claimed in claim 9, wherein first the free-radical addition polymerization and then the polyaddition is conducted.

13. A process as claimed in any of claims 9 to 12, conducted in a miniemulsion generated by means of ultrasound or by means of a nozzle jet emulsifier.

14. A process as claimed in any of claims 9 to 13, wherein the free-radical addition polymerization is conducted at temperatures of from 20 to 150°C.

15. A process as claimed in any of claims 9 to 14, wherein the polyaddition is conducted at temperatures from 30 to 120°C.

16. A process as claimed in any of claims 9 to 15, wherein the free-radical addition polymerization or the polyaddition is performed under superatmospheric pressure.

17. A process as claimed in any of claims 9 to 16, wherein the addition polymerization is conducted with induction by radiation.

18. The use of a hybrid dispersion as claimed in any of claims 1 to 8 as a binder for coating compositions or impregnating compositions.

19. The use of a hybrid dispersion as claimed in any of claims 1 to 8 as a binder in adhesives, varnishes, paints or paper coating slips or as a binder for fiber webs.